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22 JAN 1981

OC-M81-059

81-105

MEMORANDUM FOR: Director, Consolidated SAFE Project Office/ODP

THROUGH: Director of Data Processing

25X1 FROM:
Director of Communications

SUBJECT: Wideband Communications System Protocol 25X1

REFERENCE: OC-M80-686, 4 September 1980

1. As requested in the reference, members of our staffs have been working together to critique the design of the wideband communications system (WBCS) contention protocol. This memo documents those discussions per your staff's request. 25X1

25X1 2. We find the protocol specification deficient in two general areas: allocation of address space and separation of protocol layers.

a. The sixteen bit address established by the design is not adequate to support a logical address structure of the scope needed by the extended system. Our requirement is for 24 bits for source and destination fields. It would be desirable to implement this using the extendable address structure of Federal Telecommunications Standard 1003 (ADCCP) to take advantage of anticipated LSI hardware developments in this area; the IEEE local network standards committee has also tentatively selected this address structure.

b. The design does not provide an inherent separation between the level 2 link protocol and the level 3 network protocol layers by virtue of the fact that the level 3 packet does not permit end-to-end identifying information. In the SAFE design this data is not needed because of a one-to-one correspondence between network and link entities. In the extended network, single links on the bus will support multiple virtual circuits; this topology requires a capability for virtual circuit identification within the level 3 packet. We request that you implement an X.25 level 3 packet header structure as follow:

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- (1) semi-octet general format identifier
- (2) semi-octet logical channel group number
- (3) one octet for logical channel number
- (4) one octet for packet type identifier
- (5) one octet for C/R flag and CIU action field

The virtual channel assignment for the extended bus will be made during call set-up. The SAFE logon/call establishment procedure and BIU design should include virtual channel assignment which, of course, can be a null field for SAFE system purposes. ☐

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3. These changes are essential to implementation of the extended bus and particularly to internetworking with the MERCURY system. We appreciate the cooperation shown by your staff in jointly addressing this aspect of the WBCS design. ☐
will be available for any additional discussions that may be required. ☐

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cc: ED/ODP

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